DRAFT

San Jose Redevelopment Agency; Plant #17018
435 S. Market St, San Jose 95113

BACKGROUND

San Jose Redevelopment Agency is applying to install a new diesel standby generator:

S-1 Diesel Fire Pump Engine, Clarke/John Deere JW6HUF40, 290 hp

This source was originally issued an Authority to Construct on 1/6/06, with a permit condition requiring that the engine be located further than 1025 feet from the nearest K-12 school. Due to operational constraints, the engine will be located within 1000 feet from the nearest school. A new toxic risk screen has been conducted and public notices will be issued per Regulation 2-1-412. This engine will only be operated to test its reliability and to pump water during emergencies.

This emergency diesel engine is equipped with the best available control technology (BACT) for minimizing the release of air borne criteria pollutants and harmful air toxins due to fuel combustion. The criteria pollutants are nitrogen oxides (NOx), carbon monoxide (CO), precursor organic compounds (POC) from unburned diesel fuel, sulfur dioxide (SO2) and particulate matter (PM10). All of these pollutants are briefly discussed on the District's web site at www.baaqmd.gov.

This engine has a control module, turbocharger, and charge air cooler. S-1 meets the Environmental Protection Agency and California Air Resources Board (EPA/CARB) Tier 2 Mobile Off-Highway standard. This engine will burn commercially available California low sulfur diesel fuel. The sulfur content of the diesel fuel will not exceed 0.05% by weight. The operation of this engine, S-1, should not pose any health threat to the surrounding community or the public at large.

EMISSIONS SUMMARY

Basis: CARB U-R-004-0194 certified emission factors for this engine.
Engine Family: 5JDXL08.1037
Engine Model Number: JW6HUF40
Standby Power Rating: 290 BHP
Rated Speed: 1760 RPM

Operate: ≤ 50 hours year non-emergency use

Maximum Fuel Usage: 13.5 gallons/hour

	g/bhp-hr	Control efficiency	lb/hr	lb/yr	tpy
POC	0.336	0%	0.215	10.74	0.005
NOx	4.213	0%	2.693	134.67	0.067
CO	0.6	0%	0.384	19.18	0.010
PM	0.11	0%	0.070	3.52	0.002

SO2: (0.05% S) (1/100%) (675 gal/yr) (7.2 lb/gal) (64 SO2/32 S) = 4.86 lb/yr = 0.002 tpy

PLANT CUMULATIVE INCREASE

	tons/year		
Pollutant	current	application increase	New Total
PM-10	**0.000**	**0.002**	**0.002**
POC	**0.000**	**0.005**	**0.005**
Nitrogen Oxides	**0.000**	**0.067**	**0.067**
Sulfur Dioxide	**0.000**	**0.002**	**0.002**
Carbon Monoxide	**0.000**	**0.010**	**0.010**

TOXIC RISK SCREENING ANALYSIS

A Toxic Risk Screen was performed in accordance with the District's Toxic Risk Screen Policy since the PM10 emissions from diesel exhaust particulate matter exceeded the 0.58 lb/year trigger level found in Regulation 2, Rule 5, Table 2-5-1. Per the 5/11/2006 interoffice memo from Toxic Section, at 50 hours per year of non-emergency use, this proposed project passed the Risk Screening Analysis at 4.3 in a million cancer risk. The source meets the District's TBACT requirement for PM10 of 0.15 g/bhp-hr with a CARB certification for this engine series at 0.11 g/bhp-hr. In accordance with the District's Regulation 2, Rule 5, this risk level is considered acceptable.

The ISCST3 air dispersion computer model was used to estimate annual average ambient air concentrations. Stack and building parameters for the analysis were based on information provided by the applicant. Estimates of residential risk assume potential exposure to annual average TAC concentrations occur 24 hours per day, 350 days per year, for a 70-year lifetime. Risk estimate for an offsite worker assumes potential exposure occurs 8 hours per day, 245 day per year, for 40 years. (Note that this operating restriction is from the Stationary Diesel Engine Air Toxics Control Measure discussed below.)

The manufacturer supplied ISO 8178-D2 test cycle data to CARB. The CARB staff has determined that the John Deere engine model listed above is in compliance with the PM emission requirements of less than or equal to 0.15g/bhp-hr from the California Code of Regulations Title 17, Section 93115 (e)(2)(A) 3., Table 1: Summary of the Emission Standards and Operating Requirements for New Stationary Emergency Standby Diesel-Fueled CI Engines > 50 BHP.

BEST AVAILABLE CONTROL TECHNOLOGY (BACT)

BACT is triggered for any single pollutant that exceeds 10 pounds per highest day per Regulation 2-2-301. For this proposed project, BACT is triggered for NOx since the highest day emissions are 64.6 pounds (2.693 lb/hr x 24 hr). As shown in the table below, the S-1 Standby Diesel Engine meets the BACT2 limit for NOx for diesel engines greater than 175 hp (Reference: BACT/TBACT Handbook, IC Engine-Compression Ignition, Document #96.1.2). BACT1 for an emergency standby diesel engine is impractical and not cost effective for short hours of operation.

	CARB Certified g/bhp-hr	BACT g/bhp-hr
POC	0.336	1.5

NOx	4.213	6.9
CO	0.6	2.75
PM	0.11	0.15

CARB Stationary Diesel Engine ATCM

The State Office of Administrative Law approved the Airborne Toxic Control Measure (ATCM) on November 8, 2004. State law requires the local Air Districts to implement and enforce the requirements of the ATCM. Effective January 1, 2005, there is a prohibition on the operation of new diesel emergency standby engines greater than 50 bhp unless the following operating requirements and emission standards are met:

"Stationary Diesel Engine ATCM" section 93115, title 17, CA Code of Regulations.

Per subsection (c)(16) of the ATCM, fire pump engines are not subject to the emission requirements of subsection (e)(2)(B)3 of the ATCM. Even so, this 290 hp engine still meets the EPA Tier 2 requirements for HC, NOx, NMHC+NOx and CO. As shown in the table below, the engine meets these requirements.

	CARB Certified g/bhp-hr	ATCM Tier 2 g/bhp-hr
HC (POC)	0.34	None
NOx	4.21	None
HC+NOx	4.55	4.8
CO	0.60	2.6
PM	0.11	0.15

OFFSET ANALYSIS

Per Regulation 2-2-302 and 2-2-303, this facility does not trigger offsets because its facility wide NOx and POC emissions are each less than 10 tpy and its SO2 and PM10 emissions are each less than 100 tpy.

STATEMENT OF COMPLIANCE

S-1, diesel emergency generator, meets the Emergency Standby Engines provisions of Reg 9-8-330 and 9-8-530 (Inorganic Gaseous Pollutants: Nitrogen Oxides and Carbon Monoxide from Stationary Internal Combustion Engines). Operation of this engine will be limited to 50 hours by permit condition #22850. Records of total hours of operation, emergency hours of operation and the nature of each emergency will be kept as required by Regulation 9-8-530 and enforced by Part 3 of permit condition #22850.

Since the source is an emergency standby engine, S-1 is not subject to the requirements of Regulations 9-8-301, 9-8-302, and 9-8-502 per Regulation 9, Rule 8, Section 110.4.

9-8-110 Exemptions: The requirements of Sections 9-8-301, 302, and 502 shall not apply to the following:
110.4 Emergency standby engines.

The Owner/Operator should comply with Regulation 6, "Particulate Matter and Visible Emissions". Visible emissions should be less than Ringelmann 2 (Regulation 6-303).

The Owner/Operator should comply with Regulation 9, Rule 1, "Inorganic Gaseous Pollutants: Sulfur Dioxide for Limitations on Ground Level Concentration". Low sulfur diesel fuel ($\leq$ 0.05 wt%) will be used to meet the sulfur limitation of 0.5 wt% in Regulation 9-1-304.

This project is considered to be ministerial under the District's CEQA Regulation 2-1-311 and therefore is not subject to CEQA review. The engineering review for this project requires only the application of standard permit conditions and standard emission factors and therefore is not discretionary as defined by CEQA (MOP Chapter 2.3).

The project is within 1000 feet from one K-12 schools, Notre Dame High School, and is therefore subject to the public notification requirements of Reg. 2-1-412. A public notice was distributed on ***6/22/06*** to the parents and guardians of the school identified above and all addresses within 1000 feet of the source. The comment period ended ***7/21/06*** and ***To be determined*** comments were received. The comments and District responses are summarized below:

To be determined

Offsets, PSD, NSPS, and NESHAPS are not triggered or do not apply to this project.

CONDITIONS

Standard Condition Number 22850

Engine Family: 5JDXL08.1037
Engine Model Number: JW6HUF40
Standby Power Rating: 290 BHP
Rated Speed: 1760 RPM

COND# 22850 ----------

1. Operating for reliability-related activities is limited to 50 hours per year per engine.

[Basis: "Stationary Diesel Engine ATCM" section 93115, title 17, CA Code of Regulations,subsection (e)(2)(A)(3) or (e)(2)(B)(3)]

2. The owner or operator shall operate each emergency standby engine only for the following purposes: to mitigate emergency conditions, for emission testing to demonstrate compliance with a District, state or Federal emission limit, or for reliability-related activities

(maintenance and other testing, but excluding emission testing). Operating hours while mitigating emergency conditions or while emission testing to show compliance with District, state or Federal emission limits is not limited.

[Basis: "Stationary Diesel Engine ATCM" section 93115, title 17, CA Code of Regulations, subsection (e)(2)(A)(3) or (e)(2)(B)(3)]]

3. The owner/operator shall operate each emergency standby engine only when a non-resettable totalizing meter (with a minimum display capability of 9,999 hours) that measures the hours of operation for the engine is installed, operated and properly maintained.

[Basis: "Stationary Diesel Engine ATCM" section 93115, title 17, CA Code of Regulations, subsection (e)(4)(G)(1)]

4. Records: The owner/operator shall maintain the following monthly records in a District-approved log for at least 36 months from the date of entry (60 months if the facility has been issued a Title V Major Facility Review Permit or a Synthetic Minor Operating Permit). Log entries shall be retained on-site, either at a central location or at the engine's location, and made immediately available to the District staff upon request.
   a. Hours of operation for reliability-related activities (maintenance and testing).
   b. Hours of operation for emission testing to show compliance with emission limits.
   c. Hours of operation (emergency).
   d. For each emergency, the nature of the emergency condition.
   e. Fuel usage for each engine(s).

[Basis: "Stationary Diesel Engine ATCM" section 93115, title 17, CA Code of Regulations, subsection (e)(4)(I), (or Regulation 2-6-501)]

5. At School and Near-School Operation:
If the emergency standby engine is located on school grounds or within 500 feet of any school grounds, the following requirements shall apply:
The owner or operator shall not operate each stationary emergency standby diesel-fueled engine for non-emergency use, including maintenance and testing, during the

following periods:

a. Whenever there is a school sponsored activity (if the engine is located on school grounds).

b. Between 7:30 a.m. and 3:30 p.m. on days when school is in session "School" or "School Grounds" means any public or private school used for the purposes of the education of more than 12 children in kindergarten or any of grades 1 to 12, inclusive, but does not include any private school in which education is primarily conducted in a private home(s). "School" or "School Grounds" includes any building or structure, playground, athletic field, or other areas of school property but does not include unimproved school property.

[Basis: "Stationary Diesel Engine ATCM" section 93115, title 17, CA Code of Regulations, subsection (e)(2)(A)(1)] or (e)(2)(B)(2)]

RECOMMENDATION

Issue a conditional Authority to Construct for the following source:

S-1 Diesel Fire Pump Engine, Clarke/John Deere JW6HUF40, 290 hp

By: _____ _____

Eric Y. W. Chan **5/25/06**
Air Quality Engineer II